The effect of health insurance coverage and the doctor-patient relationship on health care utilization in high poverty neighborhoods

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ABSTRACT

African Americans have higher rates of mortality than whites who are the same age and sex. We hypothesize that in low socioeconomic status neighborhoods, having health insurance coverage and a regular health care provider increases the likelihood of receiving diagnostic tests for cardiovascular disease and diabetes. We use data from a random two-stage cluster sample of 230 adults living in high poverty census tracts to examine the effects of insurance coverage and having a regular doctor on the likelihood receiving diagnostic tests for high cholesterol, high blood sugar, and blood pressure. We find that health insurance coverage increases the odds of having a regular health care provider (p < 0.05) and of receiving the diagnostic tests (p < 0.05). Having a regular doctor mediates the effect of insurance coverage on the likelihood of receiving the tests, especially when the participant can report the physician's name.

1. Introduction

In the United States African-Americans have higher rates of morbidity and mortality than whites who are the same age and sex (Murphy et al., 2013). Prior research shows that poverty and low socioeconomic status mediate the effects of race on health outcomes where socioeconomic status includes educational attainment (Roget, 1992; Guralnik et al., 1993), income (Duleep, 1989; Sorlie et al., 1992; Roget, 1992), occupational status (Marmot et al., 1984; Moore and Hayward, 1990; Marmot et al., 1991; Waitzman and Smith, 1994), and residential location (Wilson, 1987; Carstairs and Morris, 1989; Massey, 1990; Massey and Denton, 1993; Logue and Jarjouja, 1990; LeClere et al., 1997). Health insurance coverage and access to health care mediate the effects of race and socioeconomic status on health related outcomes. We examine three important questions about this relationship in high poverty, African American neighborhoods. First, how does health insurance affect the likelihood of having a regular health care provider? Second,

how does health insurance coverage affect the likelihood of receiving tests for cardiovascular disease? And third, to what extent does having a regular health care provider mediate the effect of health insurance coverage on receiving the diagnostic tests?

Prior research has linked racial disparities in mortality to the chronic diseases of middle age (Hayward et al., 2000). These include cardiovascular disease (CVD), Type 2 diabetes mellitus (T2DM), and stroke. CVD and T2D are the number one and number seven causes of overall mortality in the US, respectively (Heron, 2016). The prevalence and incidence of these diseases is greater in the African American community compared to whites (Hayward et al., 2000). Mortality due to diseases of the heart affects a greater percentage of African Americans than all other races and ethnicities, and the percentage of deaths due to diabetes among African Americans is second only to Alaskan Natives and American Indians (Heron, 2016). Compared to whites, blacks have higher rates of death from heart disease and stroke, even when controlling for sex and age (Mensah et al., 2005).

Health care utilization, especially lack of access to preventive care, is an important cause of racial differences in morbidity and mortality (Flocke et al., 1998; Parchman and Burge, 2004; Blewett et al., 2008; Bailey et al., 2015). For this reason, it is important to understand what factors mediate the effects of race on access to care and the type of care received. Socioeconomic status is an important mediator in this relationship. Individuals who have higher incomes are likely to receive

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medical imaging tests and to use prescription medication (Filc et al., 2014). Further, low-income individuals are more likely to visit an emergency department for medical care (Filc et al., 2014). Patients with lower levels of education have an increased risk of diabetes mortality (Saydah et al., 2013) and cardiovascular disease (Kim et al., 2005). These risks persist even when controlling for comorbidities, diabetes treatment, and healthcare access (Saydah et al., 2013). Both educational attainment and occupational status are associated with the risk of cardiovascular disease, with low educational attainment being the most consistent predictor (Winkleby et al., 1992).

In this study, we examine the effect of health insurance on access to primary care and health care utilization. Bailey et al. (2015) found that when uninsured individuals receive health care services, they are less likely to receive preventative diabetes care and have an increased risk of diabetes mortality (Bittoni et al., 2015). Uninsured individuals are less likely to receive treatment for hypertension and high cholesterol, which are risk factors in cardiovascular disease (Brooks et al., 2010). Higher rates of cardiovascular disease and diabetes among African Americans (Hayward et al., 2000) reflect their lower rates of health insurance coverage (Ford et al., 1998; DeNavis-Walt et al., 2013) and their lack of access to preventative screenings and treatment. Those who are insured are more likely to receive diagnostic screenings for diabetes, cholesterol, and hypertension (Rivera-Hernandez and Galarraga, 2015). In a nationwide cohort, Lee et al. (2015) show diagnostic checks for blood pressure, blood sugar, and dyslipidemia have protective effects for heart disease related deaths. A key variable in the effectiveness of primary care is the relationship that doctors build with their patients. Blewett et al. (2008) show that having a continuous primary care provider is an important determinant to utilization of preventative services. Maintaining a sustained relationship between patients and their doctor also increases the likelihood of receiving immunizations, mammograms, flu vaccines, and eye exams (Flocke et al., 1998; Parchman and Burge, 2004).

The relationship between race and health outcomes is mediated by a causal chain linking race and ethnicity to socioeconomic status, i.e. educational attainment, occupational status, and income. Socioeconomic status in turn, affects health insurance coverage in the adult population (Kalleberg et al., 2000; Hudson, 2007; Kalleberg, 2011), which makes it possible to obtain critical diagnostic care. This study extends previous research by examining the effect of health insurance coverage on the likelihood of having a regular health care provider, and how having a regular provider affects the utilization of diagnostic care for cardiovascular disease. Our data indicate that some of the people in poor neighborhoods regard emergency departments as their regular provider. However, we find that participants who name a specific doctor as their provider are more likely to receive tests for diabetes, high cholesterol, and hypertension. In this study we hypothesize that individuals living in poor neighborhoods are more likely to be employed in jobs that pay low wages and that do not offer health insurance than workers who live in more affluent communities. Kirby (2008) suggests that the poor may have access to public clinics or other resources that afford them access to health care. However, we find that having a regular doctor and receiving diagnostic care depends greatly on having health insurance coverage, even in poor neighborhoods.

2. Materials and methods

This study uses data collected from 230 participants in the Labor Market Health Care Survey (LMHCS). The LMHCS is a multi-wave, longitudinal study of adults, age 18 and older, living in nine high-poverty Census Tracts in a county of approximately 400,000 residents. We define high-poverty Census Tracts as those where 50% or more of the families have incomes below the poverty threshold. The survey began collecting data in 2006 but approximately 90% of the data in this study has been collected since 2013. The LMHCS interviews participants every two to three years when they can be located. Participants are recruited using a two-stage random cluster sample. In the first stage, we randomly select Census Blocks from the Census Tracts that define the target population. The number of Census Blocks selected is proportional to the number of blocks in the Tract. In the second stage, we randomly select five housing units from each of the sampled Census Blocks. Next, we use city Geographic Information System to identify housing units within each selected Census Block. The survey team contacts household members in the selected housing unit by letter or by home visits. Those who agree to participate in the survey provide information on their household composition, employment history, health status, health care utilization, and income. All participants in the survey receive an interview incentive to compensate them for their time and effort.

3. Results

Our analyses include three dependent variables. These include whether or not participants have health insurance from any source, whether or not the participant has a regular health care provider and knows their doctor's name, and whether or not participants receive diagnostic tests for blood pressure, cholesterol levels, and blood sugar levels. In 2015, >89% of adult Americans had health insurance coverage and more than half had insurance through their employer (Barnnet and Vornovitsky, 2016). In our study only 12% of the participants reported having coverage through their employer, 7% purchased insurance privately, and about 5% had coverage through a family member. About one-third of participants in our study had coverage from Medicare or Medicaid. Finally, approximately one-third did not have health insurance from any source. Some of the uninsured individuals in our study may have chosen not to purchase insurance privately, even if they could afford to do so. However, only about 6% of individuals without insurance had incomes above the poverty threshold.

Table 1 presents descriptive statistics for the variables used in the multivariate analyses and for the demographic characteristics that are relevant to whether or not individuals have health insurance coverage and access to health care. Participant age ranges from 18 to 89, with a roughly even distribution over the life span; about half of the distribution is under 40. Although we define the target population based on income rather than race, >98% of the sample is African American. This

Table 1
Descriptive statistics.

	Labor Market Health Care Survey			
	Min.	Max.	Mean	Std. dev.
Age in years	18	89	42.8	17.9
Female	0	1	0.548	
Black	0	1	0.978	
Asian	0	1	0.004	
White	0	1	0.017	
Married or cohabiting	0	1	0.287	
Less than high school	0	1	0.283	
GED	0	1	0.100	
High school diploma	0	1	0.274	
Some college	0	1	0.217	
Associates	0	1	0.061	
Bachelors	0	1	0.044	
Advanced degree	0	1	0.022	
Health insurance time of interview	0	1	0.587	
Ever had health insurance	0	1	0.630	
Reports regular healthcare provider-knows doctors name	0	1	0.378	
Reports regular healthcare provider-doctors name not known	0	1	0.170	
No regular provider	0	1	0.452	
Cholesterol test last two years	0	1	0.535	
Blood sugar test last two years	0	1	0.535	
Blood pressure test last two years	0	1	0.617	
All tests in the last two years	0	1	0.483	

N = 230.

reflects the strong covariation between race (percent black) and poverty (percent poor) at the Census Tract level. The correlation across the 113 county level Census Tracts in the study is *.774* (*p-value < 0.000*). The sex distribution in the sample is roughly equal.

Over half of the participants in the sample reported that they were unmarried at the time of the last interview; less than one out of three people were married or cohabiting. The modal category for educational attainment is less than high school. Only 12.6% of participants have a college degree. Overall, the characteristics of our sample are consistent with the demographic makeup in other high poverty neighborhoods (Wilson, 1987; Massey, 1990; Massey and Denton, 1993; Wilson, 1996). Fifty nine percent of participants reported having health insurance at the time of their last interview (a slightly larger percentage, 63%, reported "ever having had health insurance" coverage). About 45% of participants reported that they did not have a regular health care provider. Approximately 17% of participants reported having a regular health care provider but did not know their doctor's name. The remaining 38% of participants reported both having a regular health care provider and could report their doctor's name. Around half of the participants reported having had a cholesterol, blood sugar, or blood pressure test in the last two years, and a little less than half of participants reported having had all three tests. These tests are highly correlated. If participants received one of the tests, it was likely they had also received the others.

In Table 2, we use multinomial logistic regression to examine the effect of health insurance coverage on the likelihood the participant has a regular health care provider. In Model 1, the participants reported having a regular provider, but they could not tell us their doctor's name. In Model 2, the participants who reported having a regular doctor could also tell us their doctor's name. The odds ratios compare participants in both models to participants who reported they did not have a regular health care provider. We find that the effect of insurance coverage is substantially greater when the study participant can name a specific doctor. Although women are more likely to have insurance in both models and older participants are more likely to have a regular provider in Model 2, the effects of health insurance coverage are statistically significant, even when controlling for the effects of sex and age.

In Table 3 we use logistic regression to examine the effects of health insurance coverage on diagnostic care and whether or not these effects are mediated by having a regular health care provider. The results reveal two important findings. First, when information about having a regular health care provider is not included in the models (Models 2, 4,6, and 8), health insurance coverage more than doubles the odds of having each of the tests individually or all of them collectively. All of the direct effects of health insurance, however, become statistically insignificant when we add the regular provider variables to the model. Second, in all but one of the models (Model 4), the health care provider variable is not

Table 2
Multinomial logistic regression of health care provider status on insurance status, sex, and age.

	Labor Market Health Care Survey	
	Model 1	Model 2
	Has regular health care provider	
	Does not know doctor's name	Knows doctor's name
	Odds ratio	Odds ratio
Has health insurance time of interview	3.066**	5.090***
Female	2.796**	2.010*
Over the age of 49	1.305	4.589***

Reference group for provider variable = No regular healthcare provider.
Odds ratios > 1 represent increased chances of having a regular health care provider.
N = 230.
p-Value < 0.05*, <0.01**, <0.001*** (two tailed).

Table 3
Logistic regression of health care utilization on insurance status and health care provider status.

	Labor Market Health Care Survey			
	Cholesterol test		Blood sugar test	
	Model 1	Model 2	Model 3	Model 4
	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Has health insurance	2.365**	1.582	2.195**	1.341
Does not know doctor's name		1.481		2.400*
Knows doctor's name		3.492***		4.215***
Constant	0.696	0.523**	0.727	0.493**
	Blood pressure test		All tests	
	Model 5	Model 6	Model 7	Model 8
	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Has health insurance	2.079**	1.430	2.571**	1.676
Does not know doctor's name		1.956		1.775
Knows doctor's name		2.927**		3.697***
Constant	1.065	0.809	0.532**	0.379***

Reference group for provider variable = No regular healthcare provider.
Odds ratios > 1 represent increased chances of having a regular health care provider.
N = 230.
p-Value < 0.05*, <0.01**, <0.001*** (two tailed).

significant unless the name of the participant can report the doctor's name. The effect of both health care provider variables is significant in the blood sugar model, whether or not the participant knows their doctors name, but the odds of having the blood sugar test are much greater when the participant knows their doctor's name.

Overall, we find that study participants with health insurance coverage are more likely to have had recent diagnostic tests for diabetes and cardiovascular disease than those participants who were uninsured. We also find that having a regular health care provider mediates the effect of insurance coverage, especially where the participant knows their doctor well enough to report their name.

4. Discussion

Our small sample size and the highly detailed nature of the survey questions limits our ability to generalize to a larger population, but we believe use of probability sampling and the opportunity to gather highly specific data in high poverty neighborhoods justifies this restriction. Although most of the individuals in our study have significant histories of labor force participation, the majority have only been able to find employment in jobs that do not offer health insurance. When employers offer insurance, the worker usually chooses to participate in the employer plan; when the worker does not participate, it is usually due to the cost of the insurance or job tenure requirements. Low incomes make purchasing insurance privately difficult. This underscores the need for expanding the availability of health insurance to all Americans through a public option that does not depend on the individual's labor force status or their employer.

Conflict of interest

The authors declare there are no conflicts of interest.

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